Ontological categories

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Abstract: This paper examines ontological categories (OC), a type of category that seems to exist in all languages. Following current trends in linguistic research, we claim that these categories belong to a closed class of functional nouns and that they make up a particular functional domain in UG. Working within the nanosyntactic approach, we claim that such a functional domain should be seen as a functional sequence (fseq) of syntactico-semantic heads. Our paper is organized as follows. In section 1.2 we present the main notion of ontological category. We then briefly introduce our theoretical framework, the main hypothesis, as well as the methodology behind our nanosyntactic analysis. In sections 1.3 and 1.4, we present and discuss the relevant data, namely syncretism and morphological containment, in more than 39 languages belonging to 23 different language families. Section 1.5 discusses the nature of some of the counterintuitive results we arrive at, with some implications of the fseq we are proposing.

The Unpublished Manuscript

A collection of Lingbuzz papers to celebrate Michal Starke's 50th birthday

Pavel Caha Karen De Clercq
Guido Vanden Wyngaerd (eds.)

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Introduction

Today, May 1st 2018, Michal Starke turns 50. We wanted to celebrate the occasion by compiling a small volume of papers for him that we are uploading as a gift to Lingbuzz today.

This collection of papers is not meant to be the final volume ever to honour Michal. It was not the aim to involve all people he has ever worked with or has been inspired by, but rather to put together a collection of papers with contributions from people whose work is deeply rooted in Nanosyntax, like the people who contributed to this volume.

We invited the contributors to make an empirical point, rather than a theoretical one, to presuppose knowledge of the nanosyntactic framework (such as phrasal spellout, the spellout procedure, spellout-driven movement, pointers, etc.), and to observe a page limit of 15 pages. The papers have undergone some light reviewing for the sake of coherence and clarity.

Importantly, the volume wants to be more than a birthday gift. We also want to pay tribute to Michal for the role he has played as the creator of Nanosyntax, a framework that the contributors to this volume love working in and that we feel has given us a new toolbox to approach the intricate and often gory details of natural language. In addition, we also want to thank Michal for founding Lingbuzz, and for his lasting efforts to maintain it, thus providing the linguistic community—for decades now—with an online platform that stimulates the free dissemination of ideas. One cannot but wonder whether something of the spirit of May 1968 got under the skin of that newborn baby 50 years ago.

We hope you enjoy reading this brand-new *Unpublished Manuscript*!

Happy birthday, Michal!

Pavel Caha
Karen De Clercq
Guido Vanden Wyngaerd

1 Ontological categories

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1.1 Introduction

This paper examines ontological categories (OC), a type of category that seems to exist in all languages. Following current trends in linguistic research, we claim that these categories belong to a closed class of functional nouns and that they make up a particular functional domain in UG. Working within the nanosyntactic approach, we claim that such a functional domain should be seen as a functional sequence (fseq) of syntactico-semantic heads.

Our paper is organized as follows. In section 1.2 we present the main notion of ontological category. We then briefly introduce our theoretical framework, the main hypothesis, as well as the methodology behind our nanosyntactic analysis. In sections 1.3 and 1.4, we present and discuss the relevant data, namely syncretism and morphological containment, in more than 39 languages belonging to 23 different language families. Section 1.5 discusses the nature of some of the counterintuitive results we arrive at, with some implications of the fseq we are proposing.

1.2 Mapping out ontological categories

1.2.1 Ontological categories: a closed class of functional nouns

A crucial topic of Kayne (2005) is that certain functional categories, like place, thing, years, color, etc. may—depending on the language—have null pronunciation while nevertheless being (universally) present in the syntax. This is the case for the functional noun hours in (1): it is overtly realized in French (1a), but not in English (1b) (where small caps indicates non-pronunciation).

(1) What time is it?

a. Il est 3 *(heures).
b. It's 3 HOURS.

In the same vein, Cinque has proposed that headless/free relative clauses involve 'a silent external Head (of a restricted class: THING, AMOUNT, PLACE, TIME, PERSON, MANNER)' (Cinque 2008: 18). In (2) we see some more examples from English, which again does not have overt realisations of these functional nouns.

(2) John bought [[what THING Mary wanted] (SUCH) THING]

As Cinque (2008: 18) points out, some languages do show overt realizations of these 'dummy' nouns (i.e. generic nouns meaning 'thing', 'person', etc.). This is illustrated in (3) with Lango (Nilo-Saharan (?), Noonan 1992: 220).

(3) márô gìn [àmê cámô]
3S.like.HAB thing REL+PART 3S.eat.HAB
'He likes what he eats'

The phenomenon is also seen in Gbe languages, Papuan languages and some Austronesian languages, among others (see Cinque 2016 for a sample). The functional nouns mentioned by Kayne (2005) and Cinque (2008) are often referred to as ontological categories in the typological literature (see Diessel 2003; Haspelmath 1997, among others).

According to Kayne (2005) and Cinque (2008), this class of nouns has limited and presumably universal membership. That is, they form a closed class of functional elements. If we take seriously the claim that there is such a closed class of functional nouns, then we can assume that they make up a particular functional domain of UG. In the cartographic framework, functional categories occupy dedicated positions in the functional sequence: this has been shown for scope-discourse properties (Rizzi 1997), for functional adverbs in the IP domain (Cinque 1999), for functional adjectives in the nominal spine (Cinque 2010), and for discourse particles in the left periphery of the clause (see Haegeman & Hill 2013; Haegeman 2014).

1.2.2 Mapping out ontological categories

Following the general nanosyntactic approach, such a functional domain should be encoded as a functional sequence of syntactico-semantic heads.[1] Our theoretical framework is Nanosyntax (Starke 2009; 2011;

[1]Note that functional approaches generally favor 'semantic maps' of many of the elements we are investigating (Haspelmath 1997).

Caha 2009), which dictates a much stricter linear ordering of structure. In Nanosyntax, syncretism and morphological containment are tools used to uncover the fine-grained ordering of heads in an fseq. Syncretism establishes linear ordering, while morphological containment allows us to establish a hierarchy (i.e. the hierarchical order of functional heads).

1.2.2.1 Syncretism

The nanosyntactic research program aims at systematically mapping out the universal structure of natural language. It offers a precise set of methodological tools to do this. Syncretism in particular can be used to discover the atoms of syntax and the way in which they are ordered. Syncretism can be defined as 'a surface conflation of two distinct morphosyntactic structures' (Caha 2009: 6). It thus arises when two or more distinct grammatical functions are spelled out by a single morpheme. Furthermore, syncretism is constrained, in that the phenomenon targets only adjacent cells in a paradigm. Since not every language will show every possible syncretism, a crosslinguistic approach is required, hopefully providing enough puzzle pieces for piecing together a full fseq (assuming, crucially, that ABA patterns are ruled out). We take for granted that the reader has a familiarity with the nanosyntactic theory of syncretism and morphological containment.

To take an example that is related to our domain of inquiry, Lakhota *táku* can lexicalise either an indefinite or an interrogative pronoun, or even a generic noun meaning 'thing'. We take this to be a syncretism. The lexical entry for *táku* is seen in (4):

(4) $<$ /táku/ $\Leftrightarrow$ [INDF [WH [THING]]] $>$

We have a single lexical entry here that can, by the Superset Principle, apply in multiple syntactic environments.

(5)
[INDF [WH [THING]]]	$\Rightarrow$	*táku*	(indefinite pronoun)
[WH [THING]]	$\Rightarrow$	*táku*	(interrogative pronoun)
[THING]	$\Rightarrow$	*táku*	(ontological category)

Note that German *etwas* exemplifies the same type of thing: indefinite *etwas* contains the wh-element *was*, which arguably contains the ontological category *-as* (which is also found with demonstratives like *d-as*). See (6).

(6) German
[*et*-[*w*-[-*as*]]]

1.2.2.2 Stem syncretism

There are cases where only part of the word is shared across cells. We call this stem syncretism. In Lakhota, for instance, the 'circumstantial stem' marking non-specificity has two forms, *to-* and *tu-* Ingham (2003: 52).

(7) Lakhota stem syncretism

THING	PERSON	PLACE	MANNER	AMOUNT	TIME
táku	**tú**-wa	**tu**-ktél	**tó**-kheškhe	**tó**-nakeča	**tó**-ha

Even though both *tu-* and *to-* appear to be indefinite/interrogative markers, the lexical packaging of these two morphemes should (obviously) be slightly different, just like the lexical packaging of *-kheskhe* and *-wa* should be. For the sake of argument we could imagine that they are structurally partitioned as in (8).

(8)

INDF | WH	… φ …	OC
to-	-kheškhe, -nakeča, etc.	
tu-		-wa, -ktél

At this point, one might wonder whether stem syncretism tells us anything about OCs, but actually it does (or can). We can view stem syncretism in terms of 'selection': some OC morphemes are large enough to fit with the smaller stem *to-*. Some are too small and must take the bigger stem *tu-*. So *tu-* will never co-occur with *-kheškhe* or *-nakeča*, just like *to-* will never co-occur with *-wa* or *-ktél*. Hence it could be argued that the size of the stem determines the size of the co-occurring morpheme (and vice versa). Thus if elements in a paradigm share a particular stem, we can assume that these elements must be (about) the same size and thus in the same area of the fseq (if not right next to each other). Since stem syncretism involves potential complications beneath the surface that are not always easy to disambiguate, however, we will avoid using stem syncretism where possible when putting together our fseq of ontological categories.

1.2.2.3 Getting under the surface

Languages are not always as transparent as Lango when it comes to overtly realizing ontological categories as 'dummy' nouns. Much more commonly, ontological categories are buried deep within indefinite or *wh*-pronouns. Nevertheless we can study them in a methodologically systematic way. Whatever it is that makes something an interrogative or an indefinite pronoun (some kind of WH-features or INDF features, respectively), by keeping this variable constant (e.g. comparing only

interrogatives across the board) we are in fact factoring out these extraneous features and getting to the ontological categories at the core of these words. More concretely, whatever it is that makes *what* and *who* different, it is crucially not the WH-feature.

Our work is in line with current work in nanosyntax on the functional structure of *wh*-words in Scandinavian languages, as elaborated by Vangsnes (2013), although we develop a macro-comparative/typological perspective involving more languages. We also note that Vangsnes argues that there are two functional sequences for *wh*-words: a D-related sequence, and a P-related sequence. Our results suggest that only one sequence is needed.

1.2.3 Summary and the data

Our working hypothesis is thus that a crosslinguistic collection of attested syncretisms in the domain of OCs should reveal the linear order of functional layers relevant to OCs and that morphological containment will decide in which hierarchical order the functional layers are directed. In the following sections we show that we do in fact find both syncretism and containment in the domain of ontological categories.

With English as a starting point, we note that it quite straightforwardly distinguishes only seven interrogative categories, to which we link 7 OCs (9a-g). Other languages distinguish an additional category, 'amount', as in French *combien*, or German *wieviel*, meaning 'how much/how many'.[2]

(9)
a.	what	THING
b.	who	PERSON
c.	where	PLACE
d.	how	MANNER
e.	when	TIME
f.	which	FORM (=Selection/Determiner)
g.	why	REASON
h.	combien	AMOUNT (=quantity)

Cysouw (2004) shows that 5% of the world's languages show a PERSON/THING syncretism, 90% lexicalize the interrogative category of PLACE , 60% lexicalize the interrogative category of FORM (or 'selection'), 40%

[2]A reviewer wonders whether we could add (THE) FACT as a universal ontological category. The reviewer notes that it appears to be universally present in factive clauses, and can, in some languages be left non-overt (as in English *I regret {the fact/Ø} that the reviewer is right*, for instance). Nouns like (THE) FACT have not been considered in our study, mostly because our empirical material centers on indefinite and interrogative pronouns, while (THE) FACT is clearly definite.

lexicalize the interrogative category of MANNER, 40% lexicalize the interrogative category of quantity, and 40% lexicalize the interrogative category of TIME. The lexeme for REASON is almost universally derived from THING; for this and other complicating reasons, we did not include it in our study for now. The ontological categories which we look at are thus the following:

(10)

a.	what	THING
b.	who	PERSON
c.	where	PLACE
d.	how	MANNER
e.	how much/many	AMOUNT
f.	when	TIME
g.	which	FORM

We looked at 39 languages belonging to 23 language families, listed here.

(11) Arawá (Paumari), Arawakan (Perené Asheninka, Asheninka Campa, Terena, Bare, Warekana, Amuecha), Aymaran (Jaqaru), Austronesian (Muna, Tukang Besi, Rapanui), Barbacoan (Awa Pit), Eskimo-Aleut (Greenlandic), Finno-Ugric (Finnish, Hungarian), Indo-European (Danish, Polish, Germanic, Latvian, Lithuanian, Greek), Kwa (Krachi), Kuliak (Ik), Kwa (Krachi), Muran (Pirahã), (West) Papuan (Maybrat), Quechuan (Imbabura Quechua), Ramu-Lower Sepik (Yimas), Sino-Tibetan (Dumi), Siouan (Lakhota), Thai-Kadai (Thai), Tucanoan (Barasano), Turkic (Azerbaijani), Uto-Aztecan (Pipil, Southern Paiute), non-Pama-Nyungan languages (Wardaman; Gooniyandi, Yawuru), Yanomaman (Sanumá)

Our main sources are a 2004 handout by Cysouw containing a great deal of cross-linguistic data, as well as Haspelmath (1997), which focuses on indefinite pronouns in a wide variety of genetically/areally unrelated language families.

1.3 Attested Syncretisms

1.3.1 The data

First off, there are languages with no syncretism at all, like Polish (Indo-European), Hungarian (Finno-Ugric) and Thai (Thai-Kadai, Smyth 2002. This is shown in table 1.1.

There are also languages with two OCs showing syncretism: in Lithuanian (Indo-European, Baltic, Haspelmath 1997: 327), *kàs* means

Table 1.1: No syncretisms

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Polish	co	kto	gdzie	jak	ile	kiedy
Hungarian	mi	ki	hol	hogy(an)	hány	mikor
Thai	aray	khray	thîi nǎy	yaŋŋay	thâwràay	mûaràay

either 'what' (THING) or 'who' (PERSON), indicating a THING/PERSON syncretism. The same syncretism is found in the interrogative/indefinite paradigm of Yawuru (Nyulnyulan, Western Australia, McGregor 2004: 128), Paumari (Arawá, Brazil, Chapman & Derbyshire 1990: 203-216), Terena (Arawakan, Eastlack 1968: 7-8), Bare (Arawakan, Aikhenvald 1995: 25, and Warekena (Arawakan, Aikhenvald 1998: 261, 325-326) (table 1.2).

Table 1.2: THING-PERSON syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Lithuanian	kàs	kàs	kur	kaip	kiek	kada
Yawuru	yangki	yangki	jana	janala(-kaja)	nganyja	bana
Paumari	nahina	nahina	hana	niha	nihafori	nihaforija
Terena	kuti	kuti	na	?	na	namo
Bare	ne	ne	awati	ika	ikabe	ikabure
Warekena	iʃi	iʃi	da-	iʃ(i)alema	iperi	yumirehe

Next, there is crosslinguistic evidence that the categories PERSON and PLACE are closely related, as shown in Awa Pit (Barbacoan, Curnow 2006: 225) with full syncretism, and in Lakhota (Siouan, Rood & Taylor 1996: 451, 457; Ingham 2003: 51-53) with stem-syncretism (see table 1.3).

Table 1.3: PERSON-PLACE syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Awa Pit	shi	mɨn	mɨn=	mizha	yawa	mizhaka
Lakhota	táku	**tú**-wa	**tu**-ktél	tó-(khe)škhe	tó-na(keča) to-haN'yaN	mizhuta tó-ha (realized) to-hą́l (unrealized)

Syncretism involving PLACE and MANNER is attested in Tukang Besi (Austronesian, Donohue 1999: 105) and Amuecha (Arawakan, Wise 1986: 573) (table 1.4).

Table 1.4: PLACE-MANNER syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Tukang Besi	paira	ie'ei (ie')emai	'umpa	'umpa	sapaira 'how much' (price)	kehia (FUT) (d)ehia (PST)
Amuecha	es	eseša	ez	ez	?	?

There is a MANNER/AMOUNT syncretism found in Wardaman (Isolate, Western Australia, Merlan 1994: §7.5) (table 1.5).

Table 1.5: MANNER-AMOUNT syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Wardaman	ngamanda	yinggiya	guda	gun.garr (-ma)	gun.garr (-ma)	nyangurlang

Finally, an AMOUNT/TIME 'when, what quantity' syncretism is instantiated by Hup (Nadahup, Brazil, Colombia, and Venezuela, Epps 2008: 778) (table 1.6).

Table 1.6: AMOUNT-TIME syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Hup	hɨ́-n'ɨ̌h	ʔŭy	hɨ́t	hɨ́p	hɨ́-m'ǽ	hɨ́-m'ǽ

In Modern Greek (Indo-European, Hellenic, Roussou 2016) there is evidence for a PERSON/PLACE/MANNER syncretism in the locative interrogative *pú*, which can be interpreted as 'to whom', 'where', or 'how'. Roussou (2016: 6) writes: '(…) interrogative *pu* primarily has a locative reading, as [(12a)], but can be interpreted as a manner adverbial (from which x, did you understand it from x) [(12b)], or stand for an indirect object, as in [(12c)] (on the latter, see Michelioudakis 2012.'). This is shown in table 1.7.

(12) a. Pú pas?
where go-2SG
'Where are you going?'
b. Pú to katalaves?
where it understood.2SG
'How did you understand this?'
c. Pú to edhoses?
where it gave.2SG
'Who did you give it to?' (Roussou 2016: (12))

Table 1.7: PERSON-PLACE-MANNER syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Modern Greek	-ti	pu	pu	pu pos	póso 'how much'	póte

Lakhota (Siouan, United States, Rood & Taylor 1996: 451, 457; Ingham 2003: 51-53) has stem syncretism of MANNER/AMOUNT/TIME, whereas Sanuma (Isolate, Brazil, Borgman 1990: 66-72) has full syncretism of these categories (table 1.8).

Table 1.8: MANNER-AMOUNT-TIME syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Lakhota	táku	**tú**-wa	**tu**-ktél	**tó**-(khe)škhe	**tó**-na(keča) **to**-haN'yaN	**tó**-hạ (realized) **to**-hą́l (unrealized)
Sanuma	?	witi	witi na	wi na	wi na	wi na

In addition to these two-cell syncretisms, some languages show widespread (even bordering on total) syncretism, as in Barasano (Tucanoan, Colombia, W. Jones & P. Jones 1991: 31), Perené Asheninca (Arawakan, Reed & Payne 1986: 330) and Asheninka Campa (Arawakan, Peru, Reed & Payne 1986: 328-329; Givón 2001: 304, citing D. Payne p.c.) (table 1.9).[3]

Table 1.9: Widespread syncretism

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Barasano	yẽ	yĩb…	dõ	dõ	dõ	dõ
Perené	paita	ninka	t^{sh}ika	t^{sh}ika	t^{sh}ika	t^{sh}ika
Asheninka						
Asheninka	tsika	tsika	tsika	tsika	tsika	tsika-paita

We also predict that 'bare' ontological categories (generic/functional/light/dummy nouns) should also be able to show syncretism (see section 1.2.2.3). Actually, syncretism here is quite rare since these light nouns are usually grammaticalized from distinct lexical nouns meaning 'thing', 'person', 'place', etc. Nevertheless, Rapanui (Austronesian) is an exception with a PERSON/THING syncretism in *me'e*: 'Headless relatives are not found. Instead a dummy head is used: *me'e* 'thing or person', *hora*

[3]For Asheninka *tsika-paita*, Cysouw (2004: 2, (2e)) glosses *paita* as TEMP'.

'time', *kona* 'place', *aŋa* 'action'' (Du Feu 1996: 47, cited in Cinque 2016: fn. 7).

1.3.2 Linear order

Again, syncretism reflects structural adjacency, revealing which syntactic heads are merged next to each other in the functional sequence. Some crucial syncretisms from the point of view of linear ordering have been put in table 1.10.

Table 1.10: Order according to the syncretisms

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Lithuanian	kàs	kàs	kur	kaip	kiek kada	
Awa Pit	shi	mɨn	mɨn =	mizha	yawa	mizhaka mizhuta
Tukang Besi	paira	ie'ei	'umpa	'umpa	sapaira	kehia, dehia
Warademan	ngamanda	yinggiya	guda	gun.garr (-ma)	gun.garr (-ma)	nyangurlang
Hup	hɨ́-n'ɨ̌h	ʔŭy	hɨ́t	hɨ́p	hɨ́-m'ǽ	hɨ́-m'ǽ

The patterns observed require a linear order of heads such that the functional layer THING is next to PERSON, which is next to PLACE, which is next to MANNER, which is next to AMOUNT, which is next to TIME.

(13) THING | PERSON | PLACE | MANNER | AMOUNT | TIME

(13) predicts when syncretisms are possible: two non-adjacent OCs in a paradigm should never be syncretic, i.e. THING and PLACE should never be syncretic to the exclusion of PERSON for instance. This is simply the *ABA theorem of Bobaljik (2007; 2012); Caha (2009), and others.

1.4 Morphological containment

The question we turn to now is which order in (14) is the correct one.

(14) a. THING > PERSON > PLACE > MANNER > AMOUNT > TIME
b. TIME > AMOUNT > MANNER > PLACE > PERSON > THING

As we will see in the next section, attested cases of morphological containment clearly indicate that (14b) is correct.

1.4.1 PERSON contains THING: PERSON > THING

In Muna (Austronesian, Indonesia, Van den Berg 1989: §8.6.2) and Amuecha (Arawakan, Wise 1986: 573), we have a clear case of THING being contained within PERSON (suggesting that PERSON is bigger than THING and thus higher up in the fseq).

(15)

	THING	PERSON
Muna	**hae**	la-**hae**
Amuecha	**es**	**es**eša

(16) TIME > AMOUNT > MANNER > PLACE > **PERSON** > **THING**

1.4.2 PLACE contains PERSON: PLACE > PERSON

Second we see in Sanumá (Borgman 1990: 67,70) and Pipil (Campbell 1985: 114) that PLACE contains PERSON, suggesting that PLACE is bigger than PERSON.

(17)

	PERSON	PLACE
Sanumá	**witi**	**witi** ha
Pipil	**ka:**	**ka:**n

(18) TIME > AMOUNT > MANNER > **PLACE** > **PERSON** > THING

1.4.3 MANNER contains PLACE: MANNER > PLACE

Danish (Indo-European), Muna (Van den Berg 1989: §8.6.2), and Southern Paiute (Uto-Aztecan, Sapir 1930: 209) illustrate cases where MANNER contains PLACE, suggesting that MANNER is bigger than PLACE.

(19)

	PLACE	MANNER
Danish	**hvor**	**hvor**dan
Muna	hamai	**peda hamai**
Southern Paiute	**my**	**my**ja

(20) TIME > AMOUNT > **MANNER** > **PLACE** > PERSON > THING

1.4.4 AMOUNT contains MANNER: AMOUNT > MANNER

AMOUNT contains MANNER in Bare (Arawakan, Aikhenvald 1995: 25), German (Indo-European), and Gooiyandi (McGregor 2004: 128)). That is, AMOUNT is structurally bigger than MANNER.

(21)

	MANNER	AMOUNT
Bare	**ika**	**ika**be
German	**wie**	**wie**viel
Gooniyandi	**yiniga**	**yiniga**ngarri

(22) TIME > **AMOUNT** > **MANNER** > PLACE > PERSON > THING

1.4.5 TIME contains AMOUNT: TIME > AMOUNT

AMOUNT is contained within TIME in Maybrat ((West) Papuan, Dol 1999: 118), Terena (Arawakan, Eastlack 1968: 7-8), Jaqaru (Aymaran, Hardman 2000: 33), and German.

(23)

	AMOUNT	TIME
Maybrat	**tiya**	ti**tiya**
Terena	**na**	**na**mo
Jaqaru	**ayka**	**ayka**p''a
German	**wieviel**	**wieviel** (Uhr)

(24) **TIME** > **AMOUNT** > MANNER > PLACE > PERSON > THING

1.4.6 TIME > AMOUNT > MANNER

Paumari (Arawá, Brazil, Chapman & Derbyshire 1990: 203-216) shows a nice case of MANNER being contained within AMOUNT and TIME, and AMOUNT contained within TIME.

(25)

	MANNER	AMOUNT	TIME
Paumari	**niha**	**niha-fori**	**niha-fori**-ja

(26) **TIME** > **AMOUNT** > **MANNER** > PLACE > PERSON > THING

1.4.7 Morphological containment is not constrained by adjacency

The nanosyntactic account of syncretism relies on syncretism being constrained by adjacency. Morphological containment, on the other hand, is not constrained by adjacency. As shown in Azerbaijani (Turkic, see Cysouw 2004), both AMOUNT and TIME contain THING, but MANNER, PLACE and PERSON do not.

(27)

	THING	…	AMOUNT	TIME
Azerbaijani	**nə**	…	**nə** kədər	**nə** vaxt

(28) **TIME** > **AMOUNT** > MANNER > PLACE > PERSON > **THING**

Similar cases are exemplified here with MANNER containing THING in Dumi (Sino-Tibetan, Van Driem 1993) and Yimas (Foley 1991: 114-115), and PLACE containing THING in Pirahã Everett (1986: 239-245) and Greenlandic (Sadock 1984).

(29)

	THING	…	MANNER
Dumi	**mwo**	…	**mwi** :ho
Yimas	**wara**	…	**wara**tnti, **wara**wal

(30) TIME > AMOUNT > **MANNER** > PLACE > PERSON > **THING**

(31)

	THING	…	PLACE
Pirahã	**gó**	…	**gó**ó
Greenlandic	**su-**	…	**su**mi

(32) TIME > AMOUNT > MANNER > **PLACE** > PERSON > **THING**

In Danish (Indo-European), moreover, PLACE is contained within AMOUNT and TIME.

(33)

	PLACE	…	AMOUNT
Danish	**hvor**	…	**hvor** meget

(34) TIME > **AMOUNT** > MANNER > **PLACE** > PERSON > THING

(35)

	PLACE	…	TIME
Danish	**hvor**	…	**hvor**når

(36) **TIME** > AMOUNT > MANNER > **PLACE** > PERSON > THING

TIME contains THING in Imbabura Quechua (Quechuan, Cole 1982: 16-20), and it contains MANNER in Bare (Aikhenvald 1995: 25) and Awa Pit Curnow (2006: 225):

(37)

	THING	…	TIME
Imbabura Quechua	**ima**	…	**ima** ura

(38) **TIME** > AMOUNT > MANNER > PLACE > PERSON > **THING**

(39)

	MANNER	…	TIME
Bare	**ika**	…	**ika**bure
Awa Pit	**mizha**	…	**mizha**ka

(40) **TIME** > AMOUNT > **MANNER** > PLACE > PERSON > THING

Finally, Muna (Austronesian, Indonesia, Van den Berg 1989: §8.6.2) and Warekena (Awarakan, Aikhenvald 1998: 261, 325-326) are cases where THING is contained within PERSON, MANNER, and AMOUNT, but not within PLACE (table 1.11).

Table 1.11: THING contained in PERSON, MANNER, AMOUNT, TIME

	THING	PERSON	PLACE	MANNER	AMOUNT	TIME
Muna	**hae**	la-**hae**	hamai	peda **hae** peda hamai (peda 'like')	se-**hae**	nefiemo (PST) indefie (PST) naefie (FUT)
Warekena	**iʃi**	**iʃi**	da-	**iʃ(i)**alema	iperi	yumirehe

(41) TIME > **AMOUNT** > **MANNER** > PLACE > **PERSON** > **THING**

Our empirical generalisations with regard to both syncretism and containment are captured by the functional sequence in (42), made up of (at least) six 'OC' heads.

(42) $[_{\text{TIME}}$ OC6 $[_{\text{AMOUNT}}$ OC5 $[_{\text{MANNER}}$ OC4 $[_{\text{PLACE}}$ OC3 $[_{\text{PERSON}}$ OC2 $[_{\text{THING}}$ OC1]]]]]]

We take (42) to be universal. The fseq captures the possible syncretisms in terms of adjacency of functional layers, while also straightforwardly capturing the attested containment relations (of which there are various kinds attested, but all of them consistent with the hierarchy given here).

1.5 Conclusion

In this study we have shown that ontological categories can be ordered in a nanosyntactic fseq, with clear generalizations to be had regarding both syncretism and morphological containment. The facts are captured in a single fseq that we take to be universal (see (42) above).

Before closing, we would like to point out that the ontological categories uncovered here have to be thought of as very small bits of structure, compared to larger lexical nouns like English thing, person, place (etc.). In Baunaz & Lander (2018) we actually propose that *what* can be decomposed into at least two morphemes: *wh-at*, with *-at* corresponding to what we there call the nominal core, a semantically bleached, non-referential functional element which can be found in certain nominal environments. Nominal cores, moreover, come in different flavors (e.g. *n*FORM, *n*BODY, *n*THING, *n*PLACE, etc.) and must be distinguished from lexical nouns (in that cores are invariable, while lexical nouns are not). If this is correct, then THING isn't actually silent in the English example in (2) at all, but rather is overtly realized in ***wh-at*** (see Baunaz & Lander's 2018 *n*THING). Semi-lexical nouns like *-thing* or *-body* in *nothing*, *somebody*, etc., furthermore, are slightly bigger than *-at* (but not as big as a full lexical noun). It seems likely to us that the fine-grained difference

in structural size between ontological category *-at* (THING), semi-lexical *-thing*, and fully lexical *thing* might be similar to the difference between light verb *v* (e.g. GET) as in *I'm getting sleepy* and the main verb *get* meaning 'receive' as in *I'm getting a motorcycle for my birthday*.[4]

As a final note, we would like to point out that our results may be considered counterintuitive in some respects. While we leave aside, for now, our ideas about the semantic import of each of the individual heads in our fseq, we would like to make a more general point about expectations, that is, what we expect to find when doing research or thinking about language. As one reviewer for a conference commented on our work: 'Do we expect to find, for example, words for 'how' built off of a word for 'who'? I bet we won't find that.' This is a perfect example of why we should not always follow our common-sense intuitions when mapping out functional structure, because in fact Serbo-Croatian shows exactly this kind of containment: *(t)ko* 'who' is contained within *kako* 'how, in what way' (we can see the same thing in *ni-ko* 'no one' and *ni-kako* 'by no means'). In other words:

(43) [ko] = PERSON
[ka- [ko]] = MANNER

Sometimes it is important to put our intuitions aside and follow the data.

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[4]We would like to thank a reviewer for comments on this topic.

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